

Abstract Submitted  
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**Size Effect and Detonation Front Curvature P. CLARK**

SOUERS, Lawrence Livermore National Laboratory — A simple theory is presented that relates the detonation velocity and shock front curvature to the radius in cylinders of explosive. The theory assumes that a skin layer on the outside is blown away and that energy flows in from the rest of the explosive to sustain the detonation. A nozzle function describes the degree of wall blow-out and relates the skin layer to the reaction zone length. The theory is based on the observation that the detonation front curvature is quadratic with radius as a result of the cylindrical symmetry. The detonation velocity decreases as the inverse radius for cylinders and the inverse one-half power of the half-width for slabs. The curvature is described by the lag distance at the edge, which is obtained from a quadratic equation involving the radius and the reaction zone length. Presented is a library of over forty detonation front curvatures, with the reaction zones being calculated from both the detonation velocity and the lag.

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- ☒ Prefer Oral Session  
☐ Prefer Poster Session

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